

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:)
)
Norbert Steven Parsoneault, et al.) **Group Art Unit: 3682**
)
Application No: 10/815,130) **Examiner: Krause, Justin Mitchell**
)
Filed: March 31, 2004) **Confirmation No.: 9169**
)
Title: FLUID DYNAMIC BEARING SPINDLE MOTOR

MAIL STOP = APPEAL BRIEF - PATENTS

Commissioner for Patents
U.S. Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

SUBSTITUTE APPELLANT'S BRIEF ON APPEAL

Sir:

This Appeal is from the Examiner's Final Rejection of claims 1-14, 21 and 22, and the Notice of Panel Decision from Pre-Appeal Brief Review of these same claims.

REAL PARTY IN INTEREST

The real party in interest is Seagate Technology LLC, a Delaware limited liability company with its place of business in Scotts Valley, California.

RELATED APPEALS AND INTERFERENCES

To the best of the undersigned's knowledge, there is no other related Appeal or Interference within the meaning of 37 CFR 1.192(c).

STATUS OF CLAIMS

Claims 1-20 were originally filed with this application. In a response filed and dated August 25, 2006, to a Restriction Requirement, Appellant withdrew claims 15-20. In an Amendment filed and dated January 8, 2007, Appellant canceled claims 15-20, amended claims

1-3, and added new claims 21 and 22. All of these amendments have been entered by the Examiner.

Claims 1-14, 21 and 22 are currently pending in the application, and these same claims are before the Board. A copy of these claims is appended hereto.

STATUS OF AMENDMENTS

Subsequent to the final Office Action from which this appeal is based, Appellant has made no amendments to the claims.

SUMMARY OF CLAIMED SUBJECT MATTER

Appellant's claimed invention is directed to a motor comprised of fluid dynamic bearings (claims 1-14, 21 and 22; specification at paragraph [0016]). The motor has a base with a bore hole and a liner that is secured within the bore hole (claim 1; *Id.* at paragraph [0030], and paragraph [0032]). The liner may be secured by press fitting, adhering, fastening, etc. (*Id.* at paragraph [0032]). A rotor assembly, which includes a shaft that rotates relative to the liner, is coupled to the base (claim 1; *Id.* at paragraph [0021] and paragraph [0034]). Furthermore, bearing fluid fills the gap(s) between the liner and the shaft (claim 1; *Id.* at paragraph [0033]). Additionally, the motor has a recirculation channel disposed outside of the liner that accommodates the bearing fluid flow to enforce favorable boundary conditions between fluid dynamic bearing regions (claim 1; *Id.* at paragraph [0036]).

In another embodiment, the liner contains one or more holes to allow the bearing fluid to flow from the gap(s) between the liner and the shaft (claim 2; *Id.* at paragraph [0033]). The liner additionally includes a top with an opening (claim 21; *Id.* at paragraph [0036]). The recirculation channel extends from the hole(s) in the bottom of the liner through the opening at the top of the liner (claim 21; *Id.*).

In still another embodiment, the recirculation channel is configured to cause the bearing fluid to flow through the hole(s) in the liner, into the recirculation channel and through the recirculation channel to the top of a wall of the liner (claim 22; *Id.*).

In still another embodiment, the recirculation channel extends along a wall and the bottom of the bore hole (claim 3; *Id.* at paragraph [0036]).

In still another embodiment, the bearing fluid flows over the top of a wall and into a reservoir of a capillary seal, which is defined between the wall and a tapered section of the shaft (claim 4; *Id.*).

In still another embodiment, a thrust bearing causes the bearing fluid to be pumped through the hole in the bottom surface of the liner, into a recirculation channel and through the recirculation channel into the reservoir (claim 5; *Id.*).

In still another embodiment, the fluid dynamic bearing is comprised of a journal bearing and a thrust bearing (claim 6; *Id.*) The journal bearing is configured asymmetrically so that it pumps bearing fluid in a downward direction towards the bottom of the liner (claim 7; *Id.* at paragraph [0035]). Additionally, the journal bearing has at least two grooved bearing surfaces (claim 8; *Id.* at [0034]).

In still another embodiment, the base is made by machining, molding, casting or forging rigid material (claims 9 and 10; *Id.* at paragraph [0023]).

In still another embodiment, the hub is cold-worked during fabrication, thereby resulting in greater strength (claim 11; *Id.*). Such cold-working may include stamping, drawing, spinning, hydroforming, molding, casting, or forging (claim 12; *Id.*). The cold-worked hub includes a flange and a stepped cylindrical sidewall extending from the flange and circumscribing at least a portion of the base (claim 13; *Id.* at paragraph [0025]). Additionally, a magnet is attached to the hub while a stator is attached to the base (claim 14; *Id.* at paragraph [0021]). The magnet/stator combination generates a downward acting preloading force on the hub (claim 14; *Id.* at paragraph [0038]).

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

At issue is whether claims 1, 2, 3, 6, 9-14, 21 and 22 are patentable under 35 U.S.C. § 103(a) over Usui (U.S. Patent No. 5,924,798) in view of Nii (U.S. Patent No. 4,938,611); whether claims 1, 2, 3, 6, 7 and 8 are patentable under 35 U.S.C. § 103(a) over Tanaka (U.S. Publication No. 2001/0022869) in view of Nii; and whether claims 4 and 5 are patentable under 35 U.S.C. § 103(a) over Tanaka in view of Nii as applied to claims 1-3, in further view of Titcomb (U.S. Patent No. 5,516,212).

ARGUMENT

Appellant received a non-final Office Action, mail dated October 26, 2006, wherein Appellant's Claims 1, 2, 6, and 9-14 stood rejected under 35 U.S.C. § 102(b), as allegedly anticipated by Usui (U.S. Patent No. 5,924,798). Furthermore, Appellant's Claims 1-3, 6-7, 9-12, and 14 stood rejected under 35 U.S.C. § 102(b), as allegedly anticipated by Tanaka (U.S. Publication No. 2001/0022869). Finally, Appellant's Claims 4 and 5 stood rejected under 35 U.S.C. § 103(a) as allegedly obvious based on Tanaka in view of Titcomb (U.S. Patent No. 5,516,212). In order to overcome these rejections, Appellant amended Claims 1-3, while adding new Claims 21 and 22.

Appellant received a final Office Action, mail date March 29, 2007, wherein Appellant's Claims 1, 2, 3, 6, 9-14, 21 and 22 stood rejected under 35 U.S.C. § 103(a) as allegedly obvious over Usui in view of Nii (U.S. Patent No. 4,938,611). Furthermore, Appellant's Claims 1-3 and 6-8 stood rejected under 35 U.S.C. § 103(a) as allegedly obvious over Tanaka in view of Nii. Additionally, Appellant's Claims 4 and 5 stood rejected under 35 U.S.C. § 103(a) as allegedly obvious over Tanaka in view of Nii in further view of Titcomb.

To establish *prima facie* obviousness, the Examiner must show at least that: (i) each and every element of the claims is found in the prior art reference(s); (ii) there exists a reasonable expectation for success in combining the elements that would lead one skilled in the art to the claims of the invention; and (iii) there exists a suggestion or motivation in the cited art to make the claimed invention from the combination of elements present. *See, e.g., In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347 (Fed. Cir. 1992); *In re Merck & Co., Inc.*, 800 F.2d 1091 (Fed. Cir. 1986); *In re Royka*, 490 F.2d 981 (CCPA 1974). The need to establish all three aspects of obviousness is important because of the tendency to wad into the "forbidden zone of hindsight." *Loctite Corp. v. Ultraseal Ltd.*, 781 F.2d 861, 944, 228 USPQ 90, ____ (Fed. Cir. 1985). It has long been established that hindsight is not permitted when determining obviousness. *See, e.g., Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc.*, 796 F.2d 443, 230 USPQ 416 (Fed. Cir. 1986); *Panduit Corp. v. Dennison Mfg. Co.*, 774 F.2d 1082, 227 USPQ 337 (Fed. Cir. 1985); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 227 USPQ 543 (Fed. Cir. 1985).

Furthermore, it has long been held that obviousness is easily rebutted by a teaching against in the prior art. *See, e.g., In Haruna*, 249 F.3d 1327, 58 USPQ2d 1517 (Fed. Cir. 2001).

Obviousness cannot be established when it can be shown that “the art in any material respect taught away “ from the claimed invention.” *In re Geisler*, 116 F.3d 1465, 1469, 43 USPQ2d 1362, 1365 (Fed. Cir. 2001).

In addition, the Examiner failed to provide clear explanations of all rejections made during the examination process. Pursuant to the Manual of Patent Examining Procedure (M.P.E.P.) § 707.07(f): “*Where the applicant traverses any rejection, the examiner should, if he or she repeats the rejection, take note of the applicant’s arguments and answer the substance of it.*” Applicant respectfully asserts that, in many instances, the examiner did not provide a response to the substance of Applicant’s arguments. These instances are noted below in Applicant’s argument.

To briefly summarize, the Examiner failed to establish a *prima facie* obviousness because at least two elements of Appellant’s claimed invention is absent from the cited references. In addition, the Examiner ignored evidence in violation of the M.P.E.P. that at least the one reference (*i.e.* Nii) cited in every single rejection actually taught against Appellant’s invention. This can be simply and easily ascertained from a brief review of claim 1, Appellant’s only independent currently pending, which reads as follows:

1. *A fluid dynamic bearing motor comprising:
a base having a bore hole;
a liner secured within the bore hole;
a rotor assembly having a shaft partially disposed within the liner, the shaft configured to rotate relative to the liner;
a fluid dynamic bearing disposed between the liner and shaft; and
a recirculation channel disposed outside of the liner, the recirculation channel for recirculating lubricating fluid during relative rotation of the shaft and the liner.*

Upon comparison of the instant claim to the cited references (*i.e.* Usui, Nii, Tanaka and Titcomb), at least the elements of: a “a liner secured within the bore hole;” “a recirculation channel;” and said “recirculation channel disposed outside of the liner;” are neither disclosed nor suggested by any of the cited references either alone or in combination. Appellant respectfully asserts that the Examiner has confused what Nii refers to as “passages” and what Titcomb refers to as “clearances” for Appellant’s claimed recirculation channel. They are simply not analogous, but instead, the passages/clearances of the cited references more simply resemble what in Appellant’s specification is referred to as “gaps” between the liner and the shaft for bearing fluid

to be maintained *within the walls* of the liner. Thus, nowhere in the cited references is a recirculation passage outside of a liner disclosed or suggested. For at least this reason the rejections should be withdrawn.

Moreover, the claimed invention's placing of a recirculation channel outside of the area inside the bore hole in which the shaft exists is not possible with the assemblies of the cited references. All of the cited references maintain fluid in continuous contact with the shaft at all times. Pumping of fluid outside of a liner secured to a bore hole is also taught against by at least Nii's requirement of centrifugal forces to maintain fluid closely in contact with radial bearings within the bore hole and towards the center of the bearing house. Thus removing fluid to a channel outside of a liner wall, as Appellant has done, is neither contemplated nor possible through the teachings of the cited references.

In addition, the Examiner has not identified the necessary teaching suggestion within the prior art that would lead a skilled person to the claimed invention. In fact, the stated advantages of the inventions of the cited references and the instant claims are distinct. The problems to which the claimed invention is directed include purging trapped air from a fluid dynamic bearing during operation, thus enhancing motor performance, simplifying rotor assembly, and substantially reducing fabrication costs. Specification at paragraphs [0037] and [0044]. No assertion that any of the cited references overcome, or even address this problem, has been made by the Examiner. This is evinced by the fact that the cited art provides no disclosure as to which parameters are critical, and what combinations or modifications are likely to be successful, for addressing the problems solved by Appellant's invention. *See e.g., In re O'Farrell*, 853 F.2d 894, 903 (Fed. Cir. 1988).

Further, the aspects of the instant claims noted above, namely the elements of a "a liner secured within the bore hole," "a recirculation channel," and a "recirculation channel disposed outside of the liner," are counter to what one skilled in the art would create absent hindsight. Appellant's claimed fluid-dynamic motor possesses a liner that would not be obvious to the inventors of the cited references at least because the liner would cause the system to retain heat. Furthermore, the liner possesses a bore hole from which fluid can flow from the gaps between the liner and the shaft to a second groove. Specification at paragraphs [0033] to [0036]. No such bore hole would be possible with the fluid-dynamic motors of the cited references at least because it would not allow purging of trapped air from the fluid dynamic bearing during

operation. Thus, Appellant's simplified rotor assembly and substantially reduced fabrication costs would not be possible. Accordingly, the cited references teach one of ordinary skill in the art away from Appellant's claimed motor, which is even stronger evidence of the unobviousness of Appellant's claimed invention.

In view of the above, Appellant respectfully asserts that the Examiner has not formed a *prima facie* rejection, and further, that the rejections which are made are based on mere hindsight. The fact that the instant invention and the cited references attempt to deal with different problems and arrive at different solutions, highlights the distinctions between Appellant's claims and the cited references, and further emphasize the absence of a *prima facie* case of obviousness. Further still, the cited references actually "teach against" Appellants claims, which is strong evidence of unobviousness.

For at least the reasons laid out in Appellant's prior responses as well as those outlined in the present Appeal Brief, Appellant respectfully requests that all of the rejections in the final Office Action be withdrawn.

I. Argument with Respect to claims 1-3, 6, 9-14, 21, and 22

Claims 1-3, 6, 9-14, 21, and 22 stand rejected under 35 U.S.C. § 103(a) as allegedly obvious over Usui in view of Nii. The final Office Action mail dated March 29, 2007, (hereinafter, "Final Office Action") alleges that it would have been obvious to modify Usui to include the fluid recirculation passage as described Nii for purposes of recirculating fluid from one end of the bearing to the other and discharging heat from the fluid. Appellant respectfully traverses the rejection.

Claim 1, from which all remaining rejected claims depend, recites, "a recirculation channel disposed outside of the liner, the recirculation channel for recirculating lubricating fluid during relative rotation of the shaft and the liner." Neither Usui nor Nii, either alone or in combination, discloses or suggests at least the claim 1 elements of (a) a recirculation passage; (b) a liner; (c) disposition of a recirculation channel outside of the liner.

Usui describes a hydrodynamic bearing apparatus having grooves on a bearing surface of the bearing or the shaft (column 2, lines 16-21). This, however, is not Appellant's invention, and, in fact, Appellant stated that such grooved bearing patterns as disclosed by Usui are "commonly known in the art." Specification at paragraph [0034]. The Examiner, nonetheless, alleges that while Usui, "does not disclose a recirculation channel disposed outside the liner" as

is claimed by Appellant, Nii makes up for this deficiency. Final Office Action at page 2. This is simply not the case.

The Examiner alleges that, “Nii teaches a bearing with a sleeve (6) and a recirculation channel (c) outside of the liner for the purposes of recirculating fluid from one end of the bearing to the other (see fig 3) and to discharge heat from the fluid to the bearing housing (col. 4, lines 26-28),” such that it would have been obvious to modify Usui to include the fluid passage of Nii. Final Office Action at 2-3. Appellant has reviewed and scrutinized the cited references, but, contrary to the Examiner’s assertion, Appellant can find no evidence that Nii either discloses or suggests either a recirculation channel, or any channel placed outside of the liner, as claimed by Appellant.

First, Nii does not disclose, describe or suggest in any part of its specification or figures any structure that is analogous to Appellant’s claimed liner. Appellant, on the other hand, describes multiple embodiments of the liner of the claimed invention including at least in Figure 2 and in the specification at paragraph [0032]:

“The liner 234 is secured within the bore hole 252, and the shaft 202 is disposed within the liner 234 such that a second end 210 of the shaft 202 is rotatably disposed on a bottom 266 of the liner 234. The liner 234 may be secured within the bore hole 252 by any number of means such as, for example, press fitting, adhering[,] fastening and the like. In one embodiment, the liner 234 is formed from a rigid material and may be stamped or drawn from a metal blank.”

Embodiments of the liner are directed to the achievement of at least Appellant’s stated objectives of assembling a fluid dynamic bearing motor in fewer steps and in less time, and in substantially decreasing costs associated with such motors. See specification at paragraph [0044].

On the other hand, Nii does not disclose or suggest *any* liner. Nii’s fluid remains within a continuous space of a bearing housing 14 in each and every embodiment. In other words, Nii’s fluid is always contained between the shaft and the walls of the bearing hole, with no impeding structure analogous to a liner. Any conclusion implying that Nii possesses a liner is hindsight. (*Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc.*, 796 F.2d 443, 230 USPQ 416 (Fed. Cir. 1986)). This is not the case in Appellant’s claimed invention. In contrast, Appellant claims a liner disposed within the bore hole, with a recirculation channel disposed *outside* of said liner

such that the bearing fluid may be pumped outside of the space housing at least the bearings and shaft.

Second, Nii does not disclose or suggest any recirculation channel or any structure analogous to Appellant's claimed recirculation channel. The Examiner has erroneously equated Nii's passage "c" with Appellant's claimed recirculation channel. This is simply a misunderstanding of Appellant's claimed structure. Nii clearly states that "[p]assages a, b, c and d are defined by the bearing housing 14, the first and second radial bearings 6, 7 and a rotating shaft 1." Nii column 3, lines 61-63. It is obvious from both Nii's description as well as its figures that these "passages" refer to gaps within the continuous area enclosed by the shaft and the walls of Nii's bearing housing walls. Such gaps are similarly described as existing in certain of Appellant's embodiments, although Appellant's gaps differ in that they are enclosed within the claimed liner (which Nii neither discloses nor suggests). Paragraph [0033] of the specification describes the arrangement in one embodiment:

"Bearing fluid fills the gap(s) between the liner 234 and the shaft 202. The bottom 266 of the liner 234 includes one or more holes 268 to allow bearing fluid to flow from the gap(s) between the liner 234 and the shaft 202 to the second groove 256."

Thus, passages as disclosed in Nii can be present in the claimed invention only insofar as they contain bearing fluid *before* it is pumped through a hole in the claimed liner (neither disclosed nor suggested in Nii) to flow into the claimed recirculation channel (also neither disclosed nor suggested by Nii).

Third, Nii neither discloses nor suggests any "recirculation" as is claimed via Appellant's "recirculation channel." Nii's fluid is simply circulated *within* the same continuous space within the bearing housing walls encompassing the shaft and radial bearings. Though Nii's fluid flows around Nii's radial bearings, Nii is simply accomplishing a cooling of the fluid. Nii column 4, lines 24-28. In complete contrast, Appellant's fluid is removed through pumping to a recirculation channel *outside* of the liner disposed within the bore hole, none of which Appellant's disclosed process or structures having been disclosed or suggested by Nii. Moreover, Appellant's claimed invention accomplishes the purging of trapped air from the fluid dynamic bearing. Appellant's specification describes the achievements possible through the claimed invention at paragraph [0037]:

“[T]he orientation of the flow of bearing fluid through circulation passage 292 beneficially purges trapped air from the fluid dynamic bearing 230 during operation, thereby enhancing motor performance. More specifically, the pumping action of journal bearing 282 and thrust bearing 284 causes the trapped air to flow through the recirculation channel 292 towards the top of the wall 264 along with the bearing fluid. As the bearing fluid reaches the top of the wall 264 and spill[s] over into the reservoir 277 of capillary seal 278, the trapped air bubbles out of the bearing fluid into the surrounding environment.”

Air removal is neither contemplated nor suggested in Nii. In fact, it would not be possible to remove trapped air to the surrounding environment through Nii's apparatus because Nii's fluid is maintained within the same uninterrupted enclosing of the bearing housing rather than being pumped to channels outside of a liner.

Because the claim 1 elements of at least -- (a) a liner; (b) a recirculation channel; and (c) a recirculation channel disposed outside of the liner -- are not disclosed or suggested by Nii or any combination of Nii and Usui, a *prima facie* case of obviousness has not been created, and this rejection should be withdrawn.

Furthermore, Appellant submits that the Examiner has erroneously attempted to find claim 1 obvious “merely by [attempting to] demonstrat[e] that each of its elements was, independently, known in the prior art.” *KSR Int'l v. Teleflex, Inc.*, 550 U.S. ___, Slip op. at 14 (2007); see also M.P.E.P. § 707.07(f). First, as explained above, the elements were not known in the art, and the Examiner has failed to create a *prima facie* case of obviousness. Additionally, nowhere in the references cited by the Examiner is there any disclosed or suggested motivation for pumping bearing fluid outside of a bore shaft and into a channel outside of a liner. Nowhere in the references cited by the Examiner is there any indication of successful purging of trapped air from the fluid dynamic bearing during operation through any combination of elements present in those references.

The only possible sources of motivation to combine the teaching of multiple references are 1) the nature of the problem to be solved; 2) the teachings of the prior art; and 3) the knowledge of persons of ordinary skill in the art. *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998). It appears that the Examiner has used hindsight reconstruction and the Appellant's disclosure “as a blueprint to reconstruct the claimed invention from the isolated teachings of the prior art,” since the “expressed motivation” to combine is lacking from the individual references and does not emanate from that knowledge generally

available to the skilled artisan. *Grain Processing Corp. v. American Maize-Prods. Co.*, 840 F.2d 902 (Fed. Cir. 1988).

In fact, not only is there an utter absence of any clear evidence of motivation to combine Nii and Usui, but Nii actually “teaches away” from Appellant’s claimed recirculation channel and from its placement outside of the liner (*In re Geisler*, 116 F.3d 1465, 1469, 43 USPQ2d 1362, 1365 (Fed. Cir. 2001)). Nii’s fluid lubricant “flows radially outwardly” in order “to improve lubrication on... the central portion of the thrust bearing 8.” Column 4, lines 44-53 (emphasis added). Thus, Nii’s disclosure is in point of fact counter to claimed embodiments of Appellant’s invention, in which bearing fluid is pumped downwards towards the liner and “in a radially inward direction from a wall 264 of the liner 234 towards the center of the base 232 such that the bearing fluid flows through the hole 268 in the liner 234 into ... [a recirculation channel],” and then “through the recirculation channel 292 to the top of a wall 264 of the liner 234.” Specification at paragraphs [0035-36]; Claims 1 and 2.

As is further evident in Figure 3 of Nii, any passage leading outside of the bore hole is avoided by the application of centrifugal forces. Column 4, lines 8-11; *see also specifically* arrows indicated in Figure 3. Figure 3 and column 3 lines 61-68 of Nii also unambiguously illustrate and describe passages for the fluid lubricant confined within the bearing housing (14), radial bearings (6, 7) and rotating shaft (1). In fact, Nii specifically states that “[i]nstead of forming such a passage c by cutting the outer periphery of the radial bearing, it may be constituted by a groove or grooves formed in the bearing housing 14.” Column 3, lines 65-68 (emphasis added). Clearly, Nii is directed to the circulation of fluid about the radial bearing within the bearing housing walls (*see* Column 4, lines 1-2), and emphasizes that fluid should be kept in the central portion of the bearing apparatus, instead of cutting the outer periphery. Figure 3; Column 4, lines 1-2 and lines 46-53; Column 3, lines 65-68. Evidently, Nii “teaches against” Appellant’s claimed recirculation of fluid via a channel outside of the liner. *See, In re Fritch*, 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992).

Nii also teaches against the pumping described at length throughout Appellant’s specification and used to remove the bearing fluid to the claimed recirculation channel outside of the liner. For Nii’s centrifugal forces applied to the fluid must be fragilely controlled to allow for the flow around its radial bearings. Column 4, lines 8-16. Thus, Appellant’s pumping action of journal bearing 282 and thrust bearing 284 would indeed disrupt Nii’s delicate balance of

centrifugal forces necessary to maintain the fluid away from the periphery of the bearing house. For at least this reason, Nii therefore teaches against Appellant's claimed recirculation channel capable of receiving pumped fluid outside of the liner.

Neither the nature of the problem to be solved, the level of one of ordinary skill in the pertinent art, general knowledge, nor any modicum of logic would lead one to contrive Appellant's claimed invention from a reference which teaches precisely against the claimed aspects of a recirculation channel disposed outside of the liner. Moreover, the elements of Appellant's claimed invention are simply not present in either Usui or Nii, alone or in combination.

For at least all of these reasons, the rejection under 35 U.S.C. § 103(a) over Usui in view of Nii should be withdrawn.

II. Argument with Respect to claims 1-3 and 6-8

Claims 1-3 and 6-8 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Tanaka in view of Nii. Appellant respectfully traverses this rejection.

Appellant requested clarification with regard to the fact that while the Examiner asserted Tanaka in view of Nii as the basis for the rejection (Final Office Action at page 6, lines 5-7), the Examiner proceeds within the same rejection to combine Usui with Nii (*Id.* at page 6 line 9 through page 7 line 2). Such a response is entirely inconsistent with M.P.E.P. § 707.07(f). Appellant again requests clarification, as was already requested in Appellant's Response filed May 29, 2007, and Appellant's Pre-Appeal Brief filed June 29, 2007. For purposes of making the arguments in this Appeal Brief, in the Pre-Appeal Brief and in Appellant's Response filed May 19, 2007, Appellant has treated Tanaka as the Examiner's intended reference alleged against claims 1-3 and 6-8 under 35 U.S.C. § 103(a) rather than Usui. In any combination, however, Appellant respectfully traverses this rejection.

The Examiner alleges that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify [Tanaka] in view of Nii, in reliance on the desired purposes of recirculating fluid from one end of the bearing to the other and discharging heat from the fluid. Appellant respectfully requests that this rejection be withdrawn.

Tanaka describes a fluid bearing device with wear resistance in starting and stopping (paragraph [0015]). However, Tanaka does not disclose or suggest "a recirculation channel disposed outside of the liner, the recirculation channel for recirculating lubricating fluid during

relative rotation of the shaft and the liner,” as required by Appellant’s claim 1. In fact, the Examiner acknowledges that Tanaka “does not disclose a recirculation channel disposed outside the liner.” Final Office Action at 6 line 14.

Appellant respectfully incorporates all arguments made with regard to Nii within this Appeal Brief, in the Pre-Appeal Brief, and previous Responses. As previously explained, Nii not only neither discloses nor suggests a recirculation channel disposed outside of a liner, as is recited in independent claim 1, but actually teaches against the claimed invention. Nii is directed to the circulation of fluid about the radial bearing within the bearing apparatus (Column 4, lines 1-2) and teaches against the claimed recirculation of fluid pumped outside of a liner (through the application of centrifugal forces), as is evident from Nii’s teaching that fluid should not be subjected to repeated viscous shearing, and should be kept in the central portion of the bearing apparatus. Figure 3; Column 4, lines 1-2, lines 8-11, and lines 46-53.

Consequently, Tanaka and Nii, alone or in combination, fail to disclose each and every element of claim 1. Thus, a *prima facie* case of obviousness has not been created, and this rejection should be withdrawn. Moreover, neither the nature of the problem to be solved, the level of one of ordinary skill in the pertinent art, general knowledge, nor any modicum of logic would lead one to contrive Appellant’s claimed invention from a reference which teaches precisely against the claimed aspects of a recirculation channel disposed outside of the liner.

In view of at least all of the above, the rejection under 35 U.S.C. § 103(a) over Tanaka in view of Nii should be withdrawn.

III. Argument with Respect to claims 4 and 5

Claims 4 and 5 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Tanaka (U.S. 2001/0022869) in view of Nii (U.S. Patent 4,938,611) as applied to claims 1-3, in further view of Titcomb (U.S. Patent 5,516,212). The Final Office Action alleges that it would have been obvious to incorporate a capillary seal between the liner and a tapered section of the shaft taught by Titcomb into the device of Tanaka. Appellant respectfully traverses the rejection.

As the Examiner has acknowledged, Tanaka “does not disclose a recirculation channel disposed outside the liner.” Final Office Action at 6 line 14. Furthermore, as has been discussed at length, Nii not only does not disclose or suggest the claimed recirculation channel disposed outside the liner, but actually teaches away from Appellant’s invention. Thus, the combination

of Nii with any other references cited by the Examiner is erroneous and incapable of yielding the claimed invention. For at least this reason, this rejection should be withdrawn.

Further, the Examiner has acknowledged that “Tanaka in view of Nii does not disclose a capillary seal defined between a wall of the liner and a tapered section of the shaft.” Final Office Action at the bottom of page 7. However, Titcomb equally fails to cure the deficiencies of Tanaka in view of Nii to include a “liner” and/or a “recirculation channel disposed outside of the liner” as recited in claim 1, from which claims 4 and 5 depend. Consequently, for at least the above reasons, Tanaka in view of Nii and in further view of Titcomb fail to disclose or suggest each and every element of claim 1, and accordingly of those claims depending therefrom (*e.g.*, claims 4 and 5), as required to support a *prima facie* case of obviousness.

Additionally, Appellant submits that the Examiner has erroneously attempted to find claim 1 obvious “merely by [attempting to] demonstrat[e] that each of its elements was, independently, known in the prior art.” *KSR*, Slip op. at 14. First, as explained above, the elements were not known in the art, and the Examiner has failed to create a *prima facie* case of obviousness. Additionally, nowhere in the references cited by the Examiner is there any disclosed or suggested motivation for pumping bearing fluid outside of a bore shaft and into a channel outside of a liner. Nowhere in the references cited by the Examiner is there any indication of successful purging of trapped air from the fluid dynamic bearing during operation through any combination of elements present in those references. See M.P.E.P. § 707.07(f).

The only possible sources of motivation to combine the teaching of multiple references are 1) the nature of the problem to be solved; 2) the teachings of the prior art; and 3) the knowledge of persons of ordinary skill in the art. *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998). It appears that the Examiner has used hindsight reconstruction and the Appellant’s disclosure “as a blueprint to reconstruct the claimed invention from the isolated teachings of the prior art,” since the “expressed motivation” to combine is lacking from the individual references and does not emanate from that knowledge generally available to the skilled artisan. *Grain Processing Corp. v. American Maize-Prods. Co.*, 840 F.2d 902 (Fed. Cir. 1988).

Relying on the disclosure provided by an inventor of exceptional skill such as the Appellant in order to contrive an “apparent reason to combine known elements in the fashion claimed” (*KSR*, Slip op. at 14) is impermissible because “[t]he question is not whether the

combination was obvious to the patentee but whether the combination was obvious to a person with ordinary skill in the art.” *Id.* at 16. Titcomb is directed to equalizing hydrodynamic pressure throughout an assembly. Titcomb column 8, lines 41-48. In contrast, the present invention is directed to recirculating lubricating fluid outside of a liner surrounding the shaft, with objectives including rotor assembly simplification, cost effectiveness, and removal of trapped air from the fluid dynamic bearing for enhancement of motor performance. These problems are neither contemplated nor possible through Titcomb’s assembly. First, Titcomb does not disclose or suggest a channel such as the recirculation channel claimed by Appellant, outside of a lining displaced in a bore hole. Titcomb’s assembly, similarly to Nii’s explained above, is composed of “clearances” (70 and 72 in Titcomb’s Figure 1) within the immediate and uninterrupted area surrounding the shaft. *See also* Column 7, lines 44-51. Thus, recirculating lubricating fluid pumped into a channel disposed outside of a liner is neither disclosed nor suggested in any of the cited references. Consequently, neither the nature of the problems to be solved, the level of one of ordinary skill in the pertinent art, general knowledge, nor any modicum of logic would lead one to contrive the claimed invention from a reference which teaches precisely against the claimed aspects of a recirculation channel disposed outside of the liner (*i.e.* Nii) in view of a reference seeking to solve problems entirely unrelated (*i.e.* Titcomb) to those solved by embodiments of the instant invention.

Accordingly, there is no teaching, suggestion or motivation to select the references for combination to arrive at the claimed invention. Moreover, the elements of Appellant’s claimed invention are simply not present in Tanaka, Nii, or Titcomb, alone or in combination. For at least all of these reasons, the rejection under 35 U.S.C. § 103(a) over Tanaka in view of Nii and in further view of Titcomb should be withdrawn.

Conclusion

Appellant respectfully submits that the present application is in condition for allowance, which action is courteously requested. Please charge any shortage in fees due in connection with the filing of this paper to **Deposit Account No. 14-1437 referencing Attorney Docket No. SEA/3350**. Please credit any excess fees to such account.

Respectfully submitted,
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Date: February 19, 2008

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CLAIMS APPENDIX

1. (Previously presented) A fluid dynamic bearing motor comprising:
 - a base having a bore hole;
 - a liner secured within the bore hole;
 - a rotor assembly having a shaft partially disposed within the liner, the shaft configured to rotate relative to the liner;
 - a fluid dynamic bearing disposed between the liner and shaft; and
 - a recirculation channel disposed outside of the liner, the recirculation channel for recirculating lubricating fluid during relative rotation of the shaft and the liner.
2. (Previously presented) The fluid dynamic bearing motor of claim 1, wherein the liner includes a bottom having a hole formed there through.
3. (Previously presented) The fluid dynamic bearing motor of claim 2, wherein the base includes the recirculation channel, the recirculation channel extending along a wall of the bore hole and along a bottom of the bore hole.
4. (Original) The fluid dynamic bearing motor of claim 3, further comprising a capillary seal having a reservoir, the capillary seal defined between a wall of the liner and a tapered section of the shaft.
5. (Original) The fluid dynamic bearing motor of claim 4, wherein the fluid dynamic bearing is configured to pump bearing fluid through the hole in the bottom surface of the liner into the recirculation channel and through the recirculation channel into the reservoir.
6. (Original) The fluid dynamic bearing motor of claim 1, wherein the fluid dynamic bearing comprises a journal bearing and a thrust bearing.
7. (Original) The fluid dynamic bearing motor of claim 6, wherein the journal bearing is configured asymmetrically to pump bearing fluid towards a bottom of the liner.

8. (Original) The fluid dynamic bearing motor of claim 7, wherein the journal bearing includes at least two grooved bearing surfaces.

9. (Original) The fluid dynamic bearing motor of claim 1, wherein the base is at least one of forged, molded or casted.

10. (Original) The fluid dynamic bearing motor of claim 1, wherein the base is at least one of machined, casted, forged or molded.

11. (Original) The fluid dynamic bearing motor of claim 1, wherein the rotor assembly includes a cold-worked hub.

12. (Original) The fluid dynamic bearing motor of claim 11, wherein the cold-worked hub is at least one of drawn, hydroformed, spun, molded, casted, forged or stamped.

13. (Original) The fluid dynamic bearing motor of claim 11, wherein the cold-worked hub further includes: a flange; and a stepped cylindrical sidewall extending from the flange and circumscribing at least a portion of the base.

14. (Original) The fluid dynamic bearing motor of claim 11, further comprising a magnet attached to the cold-worked hub and a stator coupled to the base, the magnet and the stator being configured to generate a downward acting preloading force on the cold-worked hub.

15-20. (Cancelled)

21. (Previously presented) The fluid dynamic bearing motor of claim 2, wherein the liner includes a top having an opening and the recirculation channel extends from the hole formed through the bottom of the liner to the opening of the liner.

22. (Previously presented) The fluid dynamic bearing motor of claim 2, wherein the liner includes a top having an opening and the recirculation channel is disposed to communicate lubricating fluid from the hole formed through the bottom of the liner to the opening of the liner.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.